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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/342,348 06/29/99 BROSNIHAN

T 07043/060002

EXAMINER

MM91/0606

FISH & RICHARDSON  
2200 SAND HILL ROAD  
SUITE 100  
MENLO PARK CA 94025

MAIL A

ART UNIT

PAPER NUMBER

2814

DATE MAILED:

06/06/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/342,348

Applicant(s)

BROSNIHAN ET AL.

Examiner

Anh D. Mai

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 June 1999.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Werner (U.S. Patent No. 6,046,067).

Werner teaches a method of fabricating a microelectromechanical system as claimed including:

providing a substrate having a device layer (3);

etching a first trench in the device layer, the first trench surrounding a first region (SB) of the substrate;

etching a second trench in the device layer, the second trench located in the first region (SB) and defining a microstructure. (See Figs. 1-7a).

With respect to claim 2, the method of Werner further includes forming circuitry in a second region (TB) of the substrate outside the first region (SB).

With respect to claim 3, the method of Werner further includes depositing an electrical connection over the first trench to connect the microstructure to the circuitry.

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With respect to claim 4, the method of Werner further includes depositing a filler material (4) over the isolation layer in the first trench.

With respect to claim 5, wherein the isolation layer fills the first trench.

With respect to claim 6, wherein the substrate of Werner further includes a handle layer (1) and a sacrificial layer (2).

With respect to claim 7, wherein the method of Werner further includes removing a portion of the sacrificial layer to release the microstructure. (See Fig. 5).

With respect to claim 8, wherein the step of etching the first trench etches through the device layer (3) to expose the sacrificial layer (2).

With respect to claim 9, wherein the step of etching the second trench etches through the device layer (3) to expose the sacrificial layer (2).

With respect to claim 10, wherein the sacrificial layer (2) includes silicon dioxide.

With respect to claim 11, wherein the device layer (3) of Werner includes epitaxial silicon.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Werner '067 as applied to claim 1 above, and further in view of Fahey et al. (U.S. Patent No. 5,447,884).

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Werner teaches all of the features of the claim with the exception of forming isolation layer (4) includes silicon nitride.

However, Fahey teaches forming isolation layer (60) includes silicon nitride (32). (See Fig. 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the isolation layer (4) of Werner include silicon nitride (32) as taught by Fahey to relief stress.

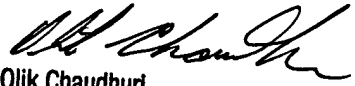
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (703) 305-0575. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A.M  
May 22, 2001

  
Olik Chaudhuri  
Supervisory Patent Examiner  
Technology Center 2800